2nd edition

SEABIRDS

Sentinel Species for the Gulf

Razorbills

Photo: Jocelyn Thuault, Canadian Wildlife Service

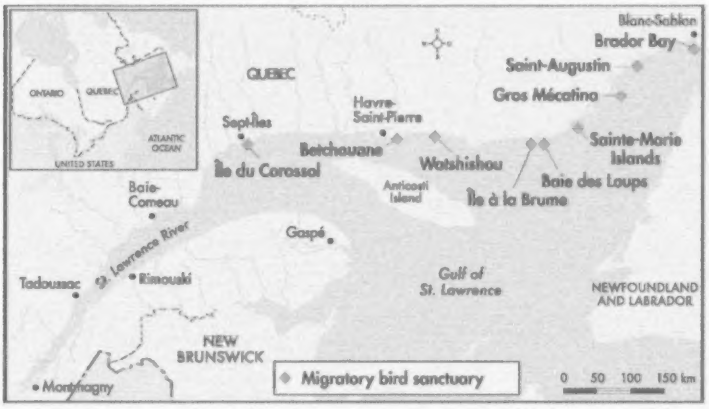
Background

The Estuary and Gulf of St. Lawrence are very productive marine ecosystems abounding in wildlife resources. Seabirds are an important link in these ecosystems. Their abundance and population trends reflect the dynamics of the processes that maintain the integrity of the St. Lawrence marine environment. In this context, we can learn something about the state of health of the Gulf of St. Lawrence by analysing population trends in seabirds living in the migratory bird sanctuaries on the North Shore of the Gulf of St. Lawrence (Figure 1). These observations are based on bird censuses conducted every five years since 1925.

Sixteen different species of seabirds can occupy these sanctuaries during the breeding season. Their numbers depend on the availability, abundance and quality of the food here, although certain anthropogenic factors can also come into play. As most seabirds are piscivores (fish eaters), it is normal that population trends are closely linked to changes in fish communities, as well as to the commercial fishery. Five species of seabirds were selected as bioindicators of the state of health of the Gulf of St. Lawrence.

One of these species, the Herring Gull, is relatively abundant, nesting in a number of colonies scattered throughout both the Estuary and Gulf of St. Lawrence. This bird is a familiar sight to those who live near the sea, being ubiquitous at fishing harbours, where it feasts on the discards of commercial fishers. Of course, gulls are also capable of catching their own prey, mostly fish like sand lance and capelin, as well as shellfish, crustaceans and insects. The Caspian Tern, a member, like the gull,

Figure 1. Migratory bird sanctuaries on the North Shore



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Herring Gull

Photo: Jean-François Rail, Canadian Wildlife Service

of the Laridae family, is much rarer and nests at only one site in Quebec, on Ile à la Brume, not far from the village of La Romaine. Like the Herring Gull, the Caspian Tern also feeds at the water's surface, but its diet does not include any fish offal.

The feeding habits of three members of the Alcidae family — the Common Murre, Razorbill and Atlantic Puffin — are much more specialized. Unlike larids, alcids dive below the water's surface for their prey, feeding primarily on the small forage fish that are the basic food of seabirds, marine mammals and large predator fish like cod. Sand lance and capelin are a part of this food chain, constituting the main food of these three seabird species.

Overview of the Situation

Herring Gull

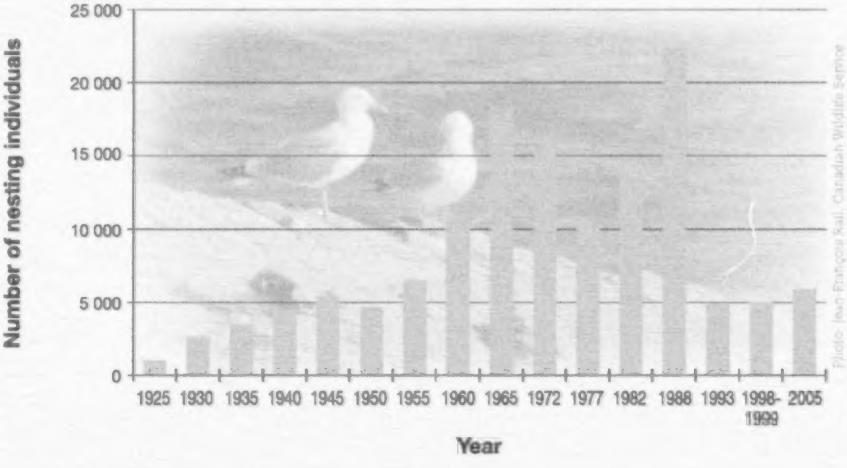
The abundance of Herring Gulls in North Shore bird sanctuaries grew steadily between 1925 and 1977 and then accelerated, rising from 10 089 individuals in 1977 to 22 409 in 1988 — an annual growth rate of 7.2%. In 1993, however, surveys showed that the number of nesting adults had fallen by some 70% (Figure 2).

This period of declining growth corresponds to the decline in cod fish stocks and the subsequent fishing moratorium imposed by Fisheries and Oceans Canada. As the cod fishery represented close to 90% of the groundfish fishery on the North Shore and a major source of the fish waste discarded at sea, scientists were able to establish a link between gull population numbers and cod landings at fishing harbours on the North Shore. Scavenger species, it would seem, benefit from fish offal discarded at sea to increase their breeding success and thus grow their populations. The link between gulls and landings of cod has proven conclusive in explaining population trends in Herring Gulls on the North Shore. This finding lends credence to the notion that better management of commercial fisheries discards would halt the population growth of Herring Gulls. However, should the cod fishery be re-opened, it is feared that gull populations could regain their past numbers, because fish waste management practices will not have changed. Such an increase would risk increasing predation and encroachment on the nesting habitats of other seabirds by gulls, and consequently affect the biodiversity of marine birds in general.

The Caspian Tern

The bird sanctuary on Ile à la Brume near La Romaine is the Caspian Tern's only nesting ground in Quebec. The first mention of nesting in this area dates back to 1884, when some 400 birds were observed. Subsequent five-year

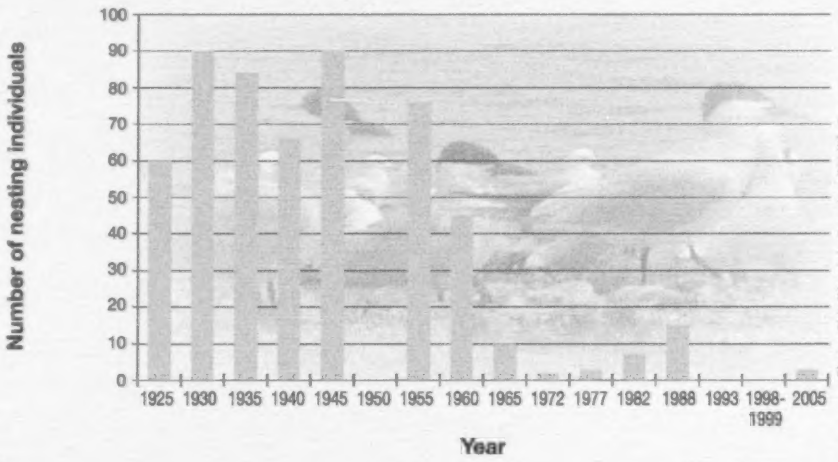
Figure 2. Population trends in Herring Gulls in North Shore migratory bird sanctuaries between 1925 and 2005



surveys tracked trends in the size of the colony, which varied from 30 to 100 birds until 1950, when it was first noticed that the terns had deserted the site. Five years later, 76 individuals were counted, but the number of nesting pairs diminished rapidly thereafter. The colony more or less maintained itself until 1988, but during the last surveys in 1993 and 1999, not a single Caspian Tern was seen (Figure 3). The most plausible cause for the species' disappearance would be disturbance by humans and poaching, an activity that is all too common on the North Shore. Happily, the species has not disappeared completely as three specimens were sighted in the sanctuary.

The possibility of losing a species of seabird in this part of the Gulf of St. Lawrence should serve as a warning to wildlife managers and underscore the fragility of every element in an ecosystem. The tern is not the first nesting species to be extirpated from the Gulf of St. Lawrence. The extermination of the Labrador Duck and the Great Auk show to what extent the avian diversity of the St. Lawrence is threatened. The disappearance of the Caspian Tern as a breeding bird from the sanctuary on Ile à la Brume would be a loss for the biodiversity of the St. Lawrence.

Figure 3. Population trends in Caspian Terns in the bird sanctuary on Île à la Brume between 1925 and 2005



Caspian Terns

Photo: Chip Weseloh, Canadian Wildlife Service

Alcidae

Alcids were present in much greater numbers 200 years ago compared to today. Almost all seabird species have been hunted for their meat, their eggs and their feathers. The Common Murre, Razorbill and Atlantic Puffin, each of which lays a single egg once a year, have not escaped this abusive commercial exploitation. According to the accounts of naturalists, around 1840, more than 750 000 Common Murre eggs were taken annually from North Shore colonies to be sold at markets in Halifax. In 1925, during the first bird survey, barely 4000 nesting individuals were counted in the North Shore sanctuaries, providing a good illustration of the pitiful state of these populations at the turn of the last century. It was only sometime around 1980 that their population numbers began to rise, climbing to about 30 000 individuals in 1998–99 (Figure 4).

Two factors may have contributed to rebuilding the Common Murre population on the North Shore: improvements made to the surveillance system in the sanctuaries

Photo: Jacques Gilineau, © Québec en images, CCDMD

Photo: Claude Nadeau, Canadian Wildlife Service

Common Murre

Figure 4. Population trends in Common Murres in North Shore migratory bird sanctuaries between 1925 and 2005

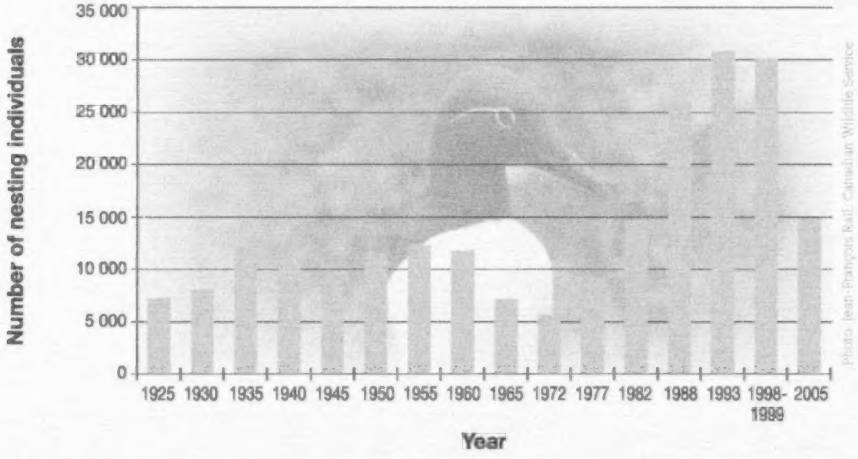
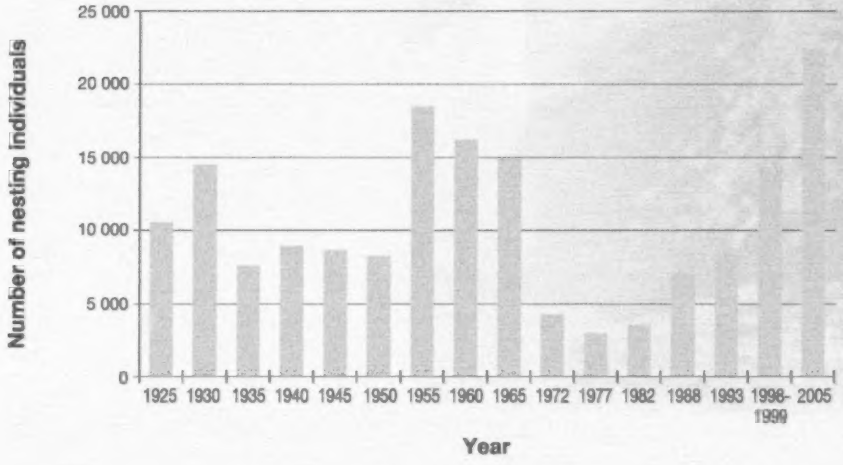


Photo: Jean-François Rail, Canadian Wildlife Service

between 1980 and 1995, and an increased abundance of forage-fish species. Despite this growth, however, we are far from the numbers that fully reflect the abundance and richness of the wildlife present in this marine ecosystem in the 19th century.

In the case of the Razorbill (Figure 5) and the Atlantic Puffin, two species whose diet is very similar to that of the murre, population numbers rose during the 1980s and 1990s, although the situation of the puffin deteriorated between 1993 and 1998–99 (Figure 6). The causes of this decline may be numerous and are merely conjecture at the present time.

Figure 5. Population trends in Razorbills in North Shore migratory bird sanctuaries between 1925 and 2005



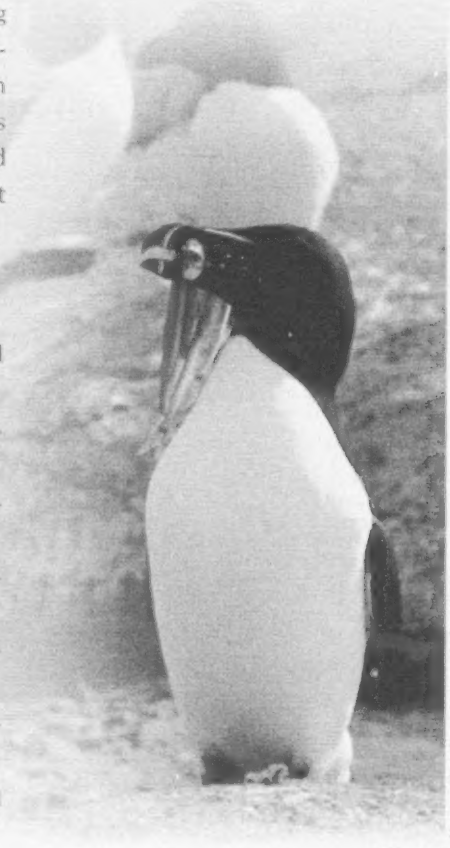


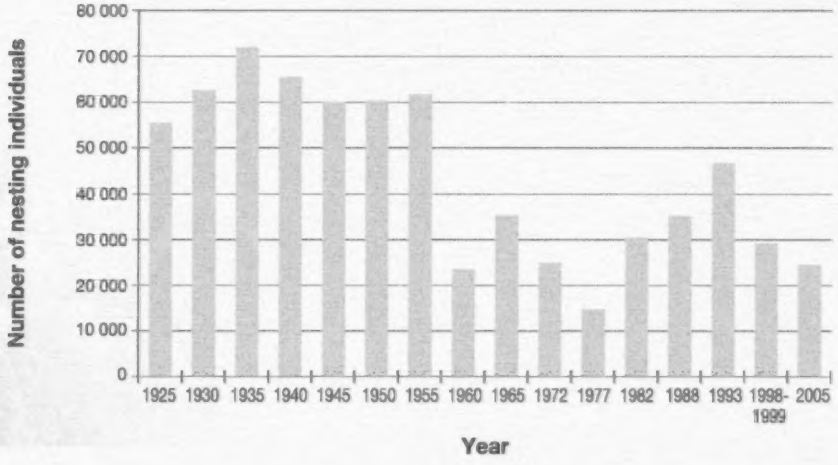
Photo: Gilles Chapdelaine, Canadian Wildlife Service

Razorbill

Photo: Jean-François Rail, Canadian Wildlife Service

Atlantic Puffins

Figure 6. Population trends in Atlantic Puffins in North Shore migratory bird sanctuaries between 1925 and 2005



Outlook

The Gulf of St. Lawrence is one of the most productive coastal ecosystems in Canada. The diversity and abundance of its various components reflect its state of health. By monitoring piscivorous seabirds in North Shore sanctuaries on a five-year basis, we are studying a trophic level that is dependent on the state of health of lower levels in the food chain, those generating dynamic processes for the entire marine ecosystem. Surveillance monitoring of seabird populations, in conjunction with research work on diet and breeding success, will allow us to understand how the St. Lawrence system functions and to recommend conservation measures for the sustainable development of these resources, based on an ecosystem approach. The way in which human beings use the resources of the St. Lawrence remains a determining element for these species, one which will have to be taken into account in interpreting the warning signs seabirds may send out about the health of the St. Lawrence ecosystem.

To Know More

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Environment Canada

State of the St. Lawrence Monitoring Program

Six government partners — Environment Canada, Fisheries and Oceans Canada, the Canadian Space Agency, Parks Canada Agency, the Ministère du Développement durable, de l'Environnement et des Parcs du Québec, the Ministère des Ressources naturelles et de la Faune du Québec — and Stratégies Saint-Laurent, a nongovernmental organization that works actively with riverside communities, are pooling their expertise and efforts to provide Canadians with information on the state of the St. Lawrence and long-term trends affecting it.

To this end, environmental indicators have been developed on the basis of data collected as part of each organization's ongoing environmental monitoring activities. These activities cover the main components of the environment, namely water, sediments, biological resources, uses and shorelines.

For more information on the State of the St. Lawrence Monitoring Program, please visit our Web site at **<www.planstlaurent.qc.ca>** or contact our offices at the following address:

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